AMATEUR SATELLITE REPORT

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F L A S H !

As we go to press, the launch of Ariane V-23 was successfully achieved at 23:58 UTC May 17. This clears the way for V-22 on June 8. A **Special Phase 3C Edition** of *ASR* will be on its way to you as you read this with a planned delivery date just before launch.

New OSCAR Days From Launch

Preparations are reaching their final stages for the early June launch of AMSAT's new OSCAR, Phase 3C. If all goes well, the most powerful, capable OSCAR ever will be in orbit in early June. Best estimates now suggest June 8 as the launch date. A number of factors could move that date a few days forward or back, however. Chief among these factors is the launch of the V-23 mission from Kourou now planned for May 17. If V-23 launch goes well on May 17, it will clear the way for the Phase 3C launch in early June. Then, after launch and orbital insertion, Phase 3C will obtain its operational name, AMSAT OSCAR 13. Here are the launch windows for V-22.

Flight	Payload	Date	Launch Windows
V-22	AMSAT PANAMSAT Meteosat P2	June 08	1. 11:12 - 12:03 UTC 2. 13:25 - 14:44 UTC

Arianespace says the Ariane V-22 launch will be broadcast on a commercial satellite. This will allow viewers with home TVRO systems to witness the launch live from Kourou. The V-22 launch will be broadcast on SPACENET S1 (120 deg West) on transponder 12. TVRO owners may want to tune in.

Record Crowds Flood Dayton Hamvention: Recap Report

With the reports now in, the 1988 Dayton Hamvention appears to be the high water mark of Hamventions; perhaps even the largest gathering of Amateurs ever held! Nearly 35,000 persons jammed the Hara Arena and surrounding grounds on a pleasant late April weekend last week. The combination of splendid weather and a rebounding Midwest economy is seen as underpinning this year's record performance. The previous high attendance was about 25,000.

AMSAT held two forums over the weekend. The Saturday forum moderated by KO5I featured Jan King, W3GEY who spoke on Phase 3C progress, Phase 4 and PACSAT. Vern Riportella, WA2LQQ, gave a presentation on future projects and Garth Hamilton, VE3HO, gave an update on the SKITREK project. On Sunday, Bill Tynan, W3XO, spoke on upcoming manned space activities; Tom Clark, W3IWI and Bob McGwier, N4HY, spoke on PACSAT, Amateur Radio's next packet satellite. Keith Pugh, W5IU, described suitable Phase 3C ground station equipment. Excellent attendance was reported at both AMSAT forums.

Member renewals were strong suggesting interest levels are increasing with the approach of the Phase 3C launch. New and renewing members totaled 152 memberships according to KO5I. Receipts of over $11,000 also represented an all-time high AMSAT HQ said. KO5I characterized the event a "complete success" and congratulated those supporting in the AMSAT/TAPR booth for their excellent work. Booth workers included N9HR, WA3GOV, W3XO, N5BRG, W5IU, W8JLE, K9PVW, K8QKY, WB9FLW, WØSL, W3IWI, N4HY, WA2LQQ and W3GEY.

(A preliminary Hamvention report was presented in *ASR* #175).

Phase 3C AMSAT Launch Information Network Service (ALINS)

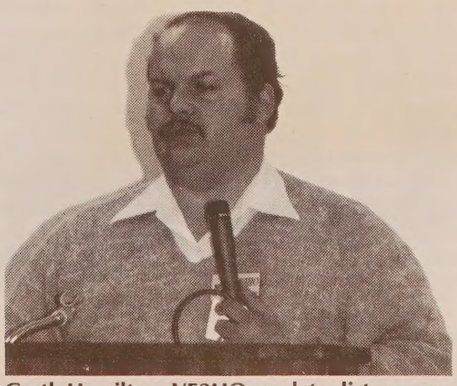
by Ralph Wallio, WØRPK, VP-Ops

AMSAT-NA will support a multi-function ALINS operation associated with the launch of PHASE-3C. During the period just before, during and just after the launch, special information nets, bulletins and transmissions will distribute last minute information.

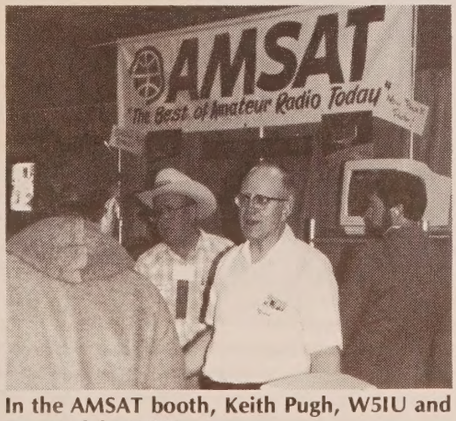
The ARIANESPACE launch schedule will control when specific nets and bulletins will be transmitted. This plan is based on a launch date of 08Jun88 and launch windows of 11:12-12:03 UTC and 13:25-14:44 UTC. Should a change in launch day or time occur, this plan will be updated accordingly.

SPECIAL AMSAT-NA NETS AND NET FORMATS

North American AMSAT nets will operate on their normal schedules on Sunday, June 5th, Tuesday, June 7th, Sunday, June 12th and Tuesday, June 14th. These nets will emphasize discussion of the PHASE-3C spacecraft and ground station operating requirements. AMSAT-NA News Service bulletins and orbital elements will be covered but net control stations are



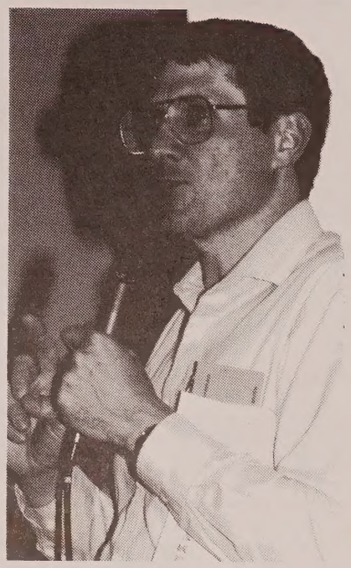
Garth Hamilton, VE3HO, updates listeners on the SKITREK.



In the AMSAT booth, Keith Pugh, W5IU and Roy Welch, WØSL.

Vern Riportella, WA2LQQ, spoke about future AMSAT projects.

Doug Loughmiller, KO5I, moderated the two AMSAT forums.



Jan King, W3GEY, spoke on PACSAT, Phase 3C and Phase 4.

encouraged to prepare themselves to focus on PHASE-3C issues.

Special AMSAT-NA nets will be held on Monday, Wednesday, Thursday and Friday, during the week of launch at the usual times on 3840 kHz. Last minute pre-launch and post-launch information will be available including orbital elements and plans for the first motor burn.

PRE- and POST-LAUNCH BULLETINS

Stations on the east and west coasts and W1AW will transmit last minute PHASE-3C information launch week. Involved stations and leadership include:

WA3NAN	Goddard Space Flight Center Greenbelt, MD Frank Bauer, KA3HDO, Group Leader Home 301-577-0271 Office 301-286-6392
W6VIO	Jet Propulsion Laboratory Pasadena, CA Courtney Duncan, N5BF, Group Leader Home 818-957-8455 Office 818-354-8336
W1AW	American Radio Relay League Newington, CT Chuck Bender, W1WPR, Chief Operator W1AW 203-666-1547 ARRL 203-666-1541

The bulletin transmission schedule, based on a 08Jun88 launch, includes operations Monday, June 6th through Friday, June 10th on the following schedule:

W1AW	Published W1AW bulletin schedule and frequencies (all modes;note)
WA3NAN	7,185 kHz - 14,295 kHz - 21,395 kHz 1600z beaming Europe 1610z beaming Africa
W6VIO	14,282 kHz - 21,280 kHz 2015 UTC 20m beaming SW 2020 UTC 20m beaming NW 2030 UTC 15m beaming NW 2035 UTC 15m beaming SW

Bulletin content will be supplied by Vern Riportella, WA2LQQ, AMSAT President, via TELEMAIL to ARRL, CDUNCAN and TCLARK (for WA3NAN).

LAUNCH TELECONFERENCE TRANSMISSION

A teleconference of launch information sources and transmit stations will be held from 30-minutes before the primary launch window opens till shutdown of the ARIANE-4 third stage (approximately 20-minutes after liftoff). Please note the transmitted teleconference will NOT stay on-the-air for the one-hour delay before AMSAT OSCAR 13 actually starts beacon transmission. (AMSAT-NA leadership will be in touch with AMSAT-SA operations intended to receive initial beacon transmissions. Results will be described in North America during the special evening 75m net cycle outlined above.)

The list of teleconference participants is growing as launch approaches. As of this date, this list includes:

NAME or FUNCTION	CALL	LOCATION	REMARKS
Vern Riportella	WA2LQQ	Warwick	Moderator
Jan King	W3GEY	Boulder	Info source
Ralph Wallio	WØRPK	Indianola	Net Control/HF+Local xmsn
ARRL	W1AW	Newington	HF+Local transmission
Goddard SFC	WA3NAN	Greenbelt	Mission aud/HF+Local transmission
JPL	W6VIO	Pasadena	HF+Local transmission
AMSAT-UK	G3RWL	Britain	Info net
AMSAT-SA	ZS6AKV	South Africa	Transmission
Repeater outlet	KA7GZH	Salt Lake City	Receive only
Repeater outlet	N7RH	Reno	Receive only
Repeater outlet	KD9QB	Indianapolis	Receive only
Repeater outlet	N9GHZ	North Central WI	Receive only

All teleconference arrangements are being handled by WØRPK. We will be using the services of TELECONNECT located in Cedar Rapids, Iowa. All calls will be made and billed from the bridge. Keep me advised of any changes in location and I need telephone numbers.

Transmit stations are encouraged to start their nets one-hour before the launch window opens (30-minutes before the teleconference starts) to clear their frequencies and to provide preliminary information.

North American HF transmission frequencies will be as follows:

W1AW	Published voice bulletin frequencies for North American coverage (Note)
WA3NAN	3860 - 7185 - 14295 - 21395 - 147.45 Beaming east on 20m and 15m
W6VIO	14282 - 21280 - 3840 or 7165 - repeater network uplink Beaming west on 20m and 15m
WØRPK	3840 and/or 7165 - repeater network uplink

Note: W1AW operating frequencies appear in April 1988 *QST*, page 87. They are: CW: 1.818, 3.58, 7.08 14.07, 21.08, 28.08, 50.08 and 147.555 MHz. Teleprinter: 3.625, 7.095, 14.095, 21.095, 28.095 and 147.555 MHz. Voice: 1.89, 3.99, 7.29, 14.29, 21.39, 28.59, 50.19 and 147.555 MHz.

Transpolar Skitrek Progress Report #15: May 7,1988

Last week, UO-11's Digitalker programmer, Michael Meerman, GØ/PA3BHF, travelled to the North Pole at the invitation of the Soviets. He shared in the celebration as the Transpolar Skitrek Expedition arrived at the Pole and marked this major milestone in their 1730 km trek from Russia to Canada. Somewhere between 100,000 and 250,000 students and other interested parties monitored SKITREK and NORDSKI-COMM on UoSAT OSCAR 11. Michael's (edited) report said in part:

"It was an excellent, very exciting trip. Unfortunately, we spent too little time at the actual North Pole. I arrived in Moscow Sunday, the 24th of April after a 4 hour flight from England. Next morning, we went to the assembly point not far from the Kremlin to meet with the Russian delegation and the press. We then set off on a six and one half hour flight to Sredniy Island in Siberia by AN-74 cargo plane. The plane was stuffed with about 30 passengers and their equipment. We spent the "night" on Sredniy Island and the next day, sometime in the afternoon, we set off with the same airplane to the Soviet ice island North Pole 28.

"We travelled by helicopter to the North Pole arriving at about 2300 GMT on April 26th. The arrival time is only my guess since there is no local time; not even a local date at the Pole. The organizers had laid a small ring on the ground round an ice pillar (the Pole itself) with a flame on top and some meridian lines stretching in the direction of the South Pole. Naturally, there was a sign saying 'Welcome to the North Pole'.

"Among the dignitaries attending were Canadian Minister of Mining, Energy and Resources Marcel Masse and his Russian counterpart, Mr. Y. Izraeli. We only stayed at the Pole about four hours. The official celebration lasted for about an hour out in the open with both ministers addressing the skiers and the press. I estimated a hundred to 150 people were gathered together; probably the largest meeting ever held at a Pole. There were flags, balloons, a MacDonalds restaurant (model 10 cm high), champagne, a post-office and a radio shack. McDonalds is one of the Canadian sponsors of the trek.

"The Russians had put up a few tents (with heaters!) but the weather was excellent with blue sky, only a light wind from the south (of course, south, it's the only direction) and with a temperature somewhere between -20 and -28 degrees Celsius.

"I made about 50 QSO's using Barry's rig (an ICOM 761) under both of the skiers calls, EXØVE and CI8UA. The pile-up of contacts was enormous, mostly Canadian and American stations, one station on the Golan-Heights, a few from South America and two or three European.

"I taped a short interview with Canadian Trekker Laurie Dexter. Regarding the Nordski-Comm navigation procedure, Laurie reported the conditions on HF have been very reliable and the skiers get their position

back via 80/20 meters from Moscow about 2 hours after they switch on their ELT beacons. In the case of UoSAT, there is a 6 to 8 hour delay since at Guildford they have to wait until UoSAT comes into range for programming. The skiers have listened to UoSAT OSCAR 11 and found it very easy to understand.

"The Pole looks like a desert; white and very flat. The only hills I saw were actually pressure ridges up to about 2 meters high. Laurie indicated pressure ridges were everywhere but none proved to be impassible although some were difficult forcing a search for a good path. Although it is flat, the surface is not at all smooth. The wind blows constantly leaving strange shapes such as those often seen on the beach. The thickness of the ice cap at the Pole varies between 3 and 12 meters.

"Laurie said they haven't seen any forms of life on their journey. However, about 30 km from the Pole they saw polar bear footprints. This was a surprise since no one expected Polar Bears to roam that close to the Pole. The Trekkers do carry a rifle for protection against bears but haven't had occasion to use it so far.

"The skiers have not yet used their rubber boats. When they encountered open water, they either went around it or waited until the water froze or the gap narrowed enough to cross it. Expectations are, however, that with warmer weather on the way, more gaps will occur, so they may yet need the boats."

Conferences Punctuate Spring and Summer

The Spring and Summer months are replete with an unusually rich assortment of space conferences and symposia this year in addition to the assortment of Amateur Radio conventions and swap fests. The following are some space-related activities that may be of interest to AMSAT members.

AMSAT is co-sponsoring the "International Space Development Conference" to be held in Denver, Colorado May 27 - 30. The conference is being hosted by the National Space Society and its Colorado Chapters and will be held at the Stouffer Concourse Hotel in Denver. A multi-track program is planned. There are tracks on International & Commercial Launches, Socio-Economic matters, Education, Technical matters and Grassroots matters. Tours and special events are planned as well. An AMSAT booth is planned and AMSAT members receive special discounts on registration since AMSAT is co-sponsoring the event. For more information on the conference, contact the conference organizers at 303-692-6788. The conference will also include a special program called "The Symposium On Private Enterprise In Space" which will be held from 9 AM to 4 PM on the first day of the conference, Friday, May 27. The private enterprise in space symposium is being organized by AMSAT Member Bill Ganoe, N7EAB, of the University of Arizona. For more information on this special session, call Bill Ganoe, N7EAB, at 602-621-2528 or Jill Steele at 303-692-6788.

"Spaceweek 88" this year has the theme "Space: A Commitment to Our Future" and will be celebrated July 16 thru 24. Based in Houston, the non-profit Spaceweek organization needs local coordinators to organize celebrations in schools, civic groups, planetariums, etc. For details, call Spaceweek National Headquarters at 713-480-0007.

The Minnesota Space Frontier Society, a chapter of the National Space Society, will be participating in Spaceweek 88 with displays at three locations in Minneapolis and seeks participation and materials from interested parties. Call 612-927-9743 for further info. A BBS may be accessed at 612-920-5566.

The Second Annual Utah State University Conference On Small Satellites will be held September 18 - 21 in Logan, Utah. Abstracts of papers are due by July 1. Contact Dr. Frank Redd at 801-750-3554 for further information.

AMSAT UK and the University of Surrey will hold their Third Annual Space Colloquium at Surrey (England) July 29 - 31. The Colloquium will feature both technical and operational sections and a broad range of papers will be presented. See *ASR* #164, December 14, 1987 for further details or call AMSAT UK Secretary Ron Broadbent, G3AAJ, in London at 011-44-989-6741.

Short Bursts

• AMSAT HQ announces that nominations for the office of Director are now in order. There are seven Directors and two alternates on AMSAT's Board of Directors. A Director serves for two years. There are four seats up for election this year. Any five current AMSAT members may nominate. In addition, a Member Society can nominate. Nominating petitions including the nominator's names and member numbers must reach AMSAT HQ not later than June 30, 1988. Send nominating petitions to AMSAT, 850 Sligo Avenue, Silver Spring, MD, 20910.

• The new AMSAT Phase 3C poster debuted at Dayton and is now available from AMSAT HQ by mail. It makes a lovely shack wall display and helps to support AMSAT projects. And AMSAT's official callsign badges are again in production. The poster and the badges each cost $7.50 plus postage and handling of $1 each (to U.S. destinations; more elsewhere.) Order today direct from AMSAT HQ. Visa and MC accepted; 301-589-6062 days.

• AMSAT OSCAR 10 returned to service May 14 providing Mode B communications (70 cm up, 2 m down) to users worldwide.

From May 14 thru May 30:	MA 20 through MA 220
From June 01 thru June 14:	MA 25 through MA 225
From June 15 thru June 30:	MA 30 through MA 230

Please use minimum power required for communications.

• According to John Biro, K1KSY, the following frequencies are used by the Soviets in connection with the Mir Space Station.

143.625 MHz	Voice frequency
166.000 MHz	Wideband telemetry; may be KVANT or TM-4; tune to 165.875 or 166.130 as signal power is at end points
247.500 MHz	Wideband FM telemetry 250 kHz wide from KVANT service pod
922.755 MHz	10 Watt CW from Soyuz TM-4

925.250 or 925.260 MHz is a likely candidate for Progress 36T

The 19.954 MHz ± 1 kHz FSK is from Cosmos 1686,the add-on module to Salyut-7.

AMSAT-LU Joins In PACSAT Consortium

AMSAT-LU is the latest affiliated organization to join with AMSAT-NA in pioneering a new class of satellites the first of which will be launched in 1989. AMSAT Argentina President Carlos Huertas, LU4ENQ and AMSAT-LU First Vice President Arturo Carou, LU1AH, met with AMSAT-NA officials in Dayton Ohio during the Hamvention recently and agreed on the outline of a joint project. According to the agreement in principle, AMSAT-LU and AMSAT-NA will cooperate in the development and construction of a packet radio satellite (PACSAT) owned and operated by AMSAT-LU. A definitive agreement is expected to be signed by mid-May AMSAT-NA officials said.

The agreement in principle with AMSAT-LU means that at least four significant satellites are to be built by AMSAT-NA in the next months. In addition to LU-SAT, AMSAT-NA has agreed to work with Brazil AMSAT

Carlos Huertas, LU4ENQ (left) President of AMSAT-LU and Junior DeCastro, PY2BJO, President of Brazil AMSAT in the AMSAT booth.

Some of the folks who staffed the AMSAT booth at the Hamvention: (l-r) Bill Tynan, W3XO; Bob Strickland, N5BRG; Doug Loughmiller, KO5I; Bob Rogers, W8JLE; KO Learner, K9PVW; Junior DeCastro, PY2BJO.

ARRL Directors Tom Frenaye, K1KI (left) and Paul Graver, WØFIR (center) greet Westlink Editor Bill Pasternak, WA6ITF.

in Project DOVE: Brazil Peacetalker (an educational voice synthesizer project) and the Center for Aerospace Technology (CAST), a center of excellence at Weber State College, Ogden Utah. A fourth satellite, also a PACSAT, is being built for AMSAT-NA.

Other projects under way which include a strong Amateur Radio component are UoSAT-3 being developed by the University of Surrey (England) and being sponsored in large measure by VITA, the Volunteers In Technical Assistance. A quick scan of expected new OSCARs for 1989 include the four new birds from AMSAT-NA, UoSAT-3 and probably JAS-2 (a clone of JAS-1). New GAS can projects may be on the way from Richland Community College (EDSAT) among others.

In addition, a preliminary agreement has been reached to build and launch HEALTHSAT-A, a PACSAT built by AMSAT-NA for SatelLife for launch from the Mir Space Station in 1989. Although HEALTHSAT-A is not planned to be in the Amateur Service, a team of physician-Amateurs with OSCAR communications experience is being trained in PACSAT use for health-related satellite-borne electronic mail under an old concept developed by Yosh Pal and more recently codified and organized by Nobel Laureate Dr. Bernard Lown of Harvard.

With all this going on, AMSAT membership is expected to blossom. Information about participating in any or all of these exciting programs and info on AMSAT membership as well as a free brochure may be obtained by writing to AMSAT, P.O. Box 27, Washington, D.C. 20044. A business sized SASE is appreciated. Or you may call 301-589-6062. If you're already a member, a generous donation is in order to insure these new programs are well-financed; that no corners have to be cut on performance because support was lacking.

Transpolar Skitrek Progress Report #16: May 14, 1988

(Michael Meerman, GØ/PA3BHF, continues his report)

NP-28 is one of the three Soviet scientific drifting polar stations, mainly for ocean and weather research. The landscape at NP-28 does not really differ from that at the North Pole. Its distance from the Pole on April 26th was only about 28 km. There are just three Soviet stations and one privately based Californian-Alaskan-Canadian station on the ice cap. NP-28 is about 800 by 800 meters. When it was set up in 1986, it measured about 1.5 by 2 km. It is, of course, not like an island surrounded by water but is attached; part of the polar cap. It has drifted about 4000 km in the polar currents since 1986. The station consists of 5 or 6 wooden barracks, a common room with kitchen, Meteor/NOAA receiving station, radio shack, a hydrological station where sea temperatures and currents are monitored and also a radio hut for the airplanes. About 25 men work at NP-28 in 1 year tours. People work around the clock as the sun stays at a constant elevation. The meals at NP-28 were at a set time but Michael reports he could not see a real difference between what was served at breakfast, lunch or dinner.

NP-28 has begun to crack apart since Michael's visit. Buildings have had to be moved and the large AN-74 jet cargo plane that had dropped supplies to the skiers and brought Michael and others to the Pole can no longer land on NP-28's shortened runway.

Teachers who wish their students to plot NP-28's southward drift may want to access the WØRPK AMSAT Bulletin Board at 1-515-961-3325 to obtain a special exercise containing NP-28 position data since the beginning of the trek. Also available on the BBS is a questionnaire which should be filled out by all schools following the trek. The questionnaire may also be obtained by sending a business sized SASE to: Richard C. Ensign, N8IWJ, 421 N. Military, Dearborn, MI 48124.

The skiers have made excellent progress recently and are now about half-way between the Pole and Canada. On May 13 and 14 they were resting after their first Canadian air supply. A low cloud ceiling prevented the Twin Otter from spotting the skiers as it flew north so the plane landed at NP-28 and waited for the weather to clear while loading up with Canadian and Russian supplies. On May 13, in clear weather, the plane headed south, quickly spotted the skiers and landed beside their camp. Pilot and co-pilot then spent the "night" with the skiers before taking off for the trip south. During this rest period the skiers coordinates were 86d 39m North and 75d 38m West.

This report has been prepared by Rich Ensign, N8IWJ, AMSAT Science Education Advisor For Use With The AMSAT Teachers Guide "Exploring The High Arctic From Your Classroom". These reports may be regularly accessed on the AMSAT WØRPK bulletin board by calling 1-515-961-3325.

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The Radio Amateur Satellite Corporation

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The new AMSAT Phase 3C wall poster, in full color, is now available for your shack. The large colorful poster, based on an original painting by Bill Hans of Colorado, measures 11 by 14 inches and shows the new Phase 3C antenna array and solar panels in unprecedented detail. Order from AMSAT HQ for only $7.50 plus postage and handling ($1 U.S.). Order today. Get several for your friends. Ask about quantity discounts for your club or for gifts.

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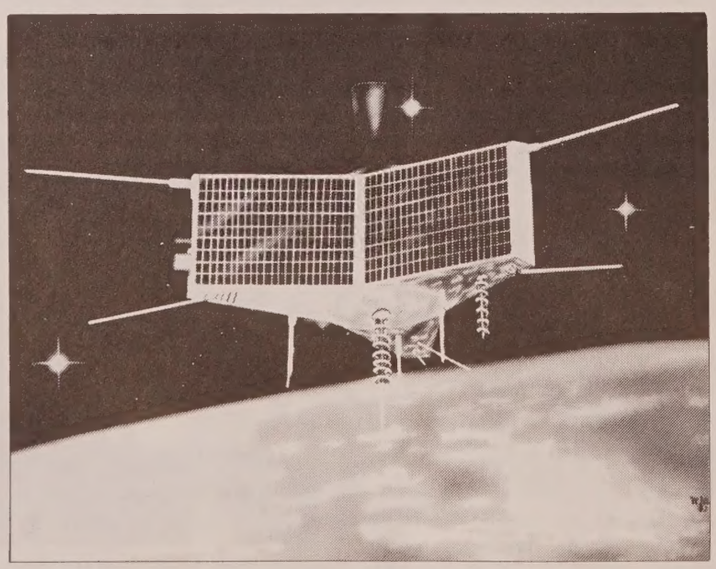

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